

ONTARIO MINISTRY OF ENVIRONMENT
36936000023790

BERTIE

water

treatment

plant

1968

TD
367
.A56
B47
1968
MOE

LABORATORY LIBRARY
WATER RESOURCES COMMISSION

RARY COPY

AUG 20 1969

ONTARIO WATER
RESOURCES COMMISSION

LABORATORY & RESEARCH
MINISTRY OF THE ENVIRONMENT

ONTARIO WATER RESOURCES COMMISSION

Division of Plant Operations

#1

TD
367
.A56
B47
1968

Bertie : water treatment plant.
81614



Water management in Ontario

Ontario
Water Resources
Commission

135 St. Clair Ave. W.
Toronto 7
Ontario


We are pleased to present you with the Operating Summary for the water treatment facilities operated for you during 1968.

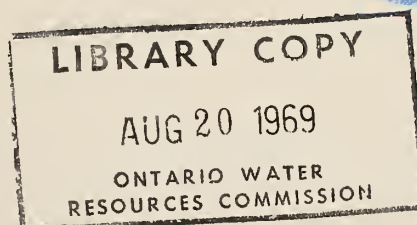
Both the financial and technical information presented should be of assistance to your present and future planning in this important phase of municipal activity.

A new format has been devised to allow greater readability with equally detailed content. We trust that this will meet with your approval.

Our staff wish to express their appreciation for your co-operation throughout the year.


D. S. Caverly,
General Manager.


D. A. McTavish, P. Eng.,
Director,
Division of Plant Operations.



Environment Ontario
Lambton County Library
125 Huron Street
Tobacco, Ontario
N1A 1A1

ONTARIO WATER RESOURCES COMMISSION

CHAIRMAN

Dr. James A. Vance

VICE-CHAIRMAN

J. H. H. Root, M. P. P.

COMMISSIONERS

H. E. Brown

D. A. Moodie

L. E. Venchiarutti

GENERAL MANAGER

D. S. Caverly

ASSISTANT GENERAL MANAGERS

L. E. Owers

K. H. Sharpe

F. A. Voegelé

A. K. Watt

COMMISSION SECRETARY

W. S. MacDonnell

DIVISION OF PLANT OPERATIONS

Director

D. A. McTavish

Assistant Director

C. W. Perry

Regional Supervisor

A. C. Beattie

Operations Engineer

R. S. McKittrick

135 St. Clair Avenue West,
Toronto 7

BERTIE
water treatment plant

operated for

THE TOWNSHIP OF BERTIE

by the

ONTARIO WATER RESOURCES COMMISSION

1968 ANNUAL OPERATING SUMMARY


FOREWORD

● This operating summary outlines the project's technical capabilities and financial status in 1968. Such information mirrors past and present performance, but a major intention is to anticipate the future -- to solve problems before they occur.

The new format in which this year's data are presented is designed to offer a higher level of readability than in the past, without a corresponding decrease in compactness, accuracy and detail.

Although your Regional Operations Engineer carries the major responsibility for the contents of the report, those involved in its preparation are attached to several Commission sections and divisions. The statistics section of the Division of Plant Operations compiled the information for the graphs and charts. The draughting section of the Division of Sanitary Engineering drew the graphs. The Division of Finance provided all cost data.

Only the close co-operation of these departments allowed the publication of this summary.



Digitized by the Internet Archive
in 2015

<https://archive.org/details/bertiewatertreat23790>

CONTENTS

Title Page	i
Foreword	ii
'68 Review	1
Project Costs	2
Operating Costs	3
Process Data	5
Conclusions	Inside back cover

'68 REVIEW

The year 1968 saw the continuation of the trend to higher flows from the Bertie Township plant. A total of 512.30 million gallons of water was treated as opposed to 506.22 million gallons in 1967. The maximum flow for a single day also increased from 2.90 million gallons in 1967 to 3.19 million gallons in 1968.

The total operating costs for the year were \$50,998.06 or ten cents per thousand gallons. This is a slight increase in unit cost, as the increase in total flow did not compensate for the 8.8% increase in operating costs.

The treated water quality did not meet the OWRC standard for turbidity of one Jackson turbidity unit. However, there was a slight decrease from 1967 in treated turbidity during the year. The bacteriological quality of the water was entirely satisfactory based on 82 samples taken during the year.

PROJECT COSTS

NET CAPITAL COST (Final)	\$162,152.89
DEDUCT - Portion Financed by CMHC-MDLB (Final)	<u>109,605.08</u>
Long Term Debt to OWRC	\$ <u>52,547.81</u>
Debt Retirement Balance at Credit (Sinking Fund) December 31, 1968	\$ <u>11,199.83</u>
Net Operating	\$ 7,563.26
Debt Retirement	1,906.00
Reserve	937.13
Interest Charged	<u>2,950.19</u>
TOTAL	\$ <u>13,356.58</u>

RESERVE ACCOUNT

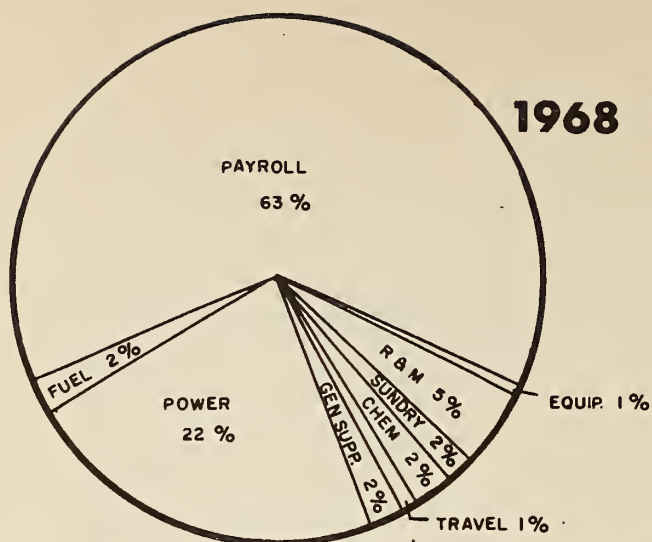
Balance at January 1, 1968	\$ 4,299.47
Deposited by Municipality	937.13
Interest Earned	239.58
	<hr/>
	\$ 5,476.18
Less Expenditures	<u>1,198.00</u>
Balance at December 31, 1968	\$ <u>4,278.18</u>

Monthly Operating Costs

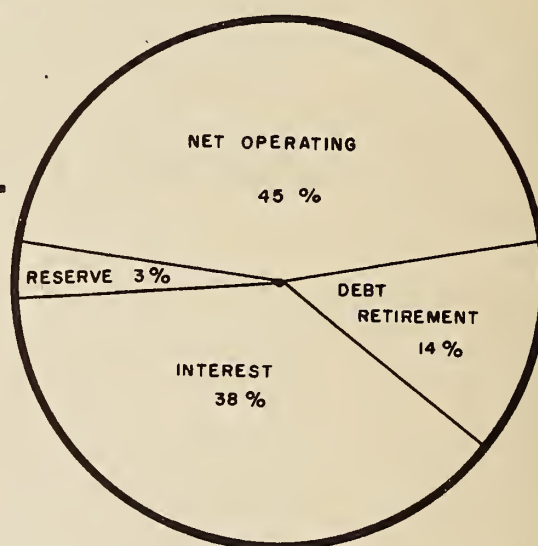
MONTH	TOTAL	PAYROLL	CASUAL	FUEL	POWER	CHEMICAL	GENERAL SUPPLIES	EQUIPMENT	REPAIRS & MAINTENANCE	SUNDRY	TRAVEL
JAN	2231.85	2062.98	110.34	-	-	-	36.50	-	-	22.03	
FEB	4081.14	2062.99	62.70	174.67	930.66	-	156.28	312.73	328.42	18.53	34.16
MAR	5119.04	3292.87	141.69	143.18	877.10	-	46.20	29.30	342.00	218.42	28.28
APRIL	4024.84	2062.99	237.38	167.98	1212.77	104.00	80.33	-	108.43	23.80	27.16
MAY	3766.41	2062.99	126.22	101.58	950.88	216.53	119.70	77.75	84.95	25.81	
JUNE	3122.35	2062.99	189.74	74.58	976.84	-	71.74	(221.60)	(217.95)	18.90	167.11
JULY	3691.02	2035.90	260.89	31.16	999.59	191.03	77.23	-	2.87	70.09	22.26
AUG	5322.03	3108.03	348.14	9.88	1224.67	-	36.00	-	541.50	24.97	28.84
SEPT	3836.22	2257.51	253.26	1.94	1177.59	-	101.72	-	22.17	22.03	
OCT	3802.84	2107.81	110.34	7.68	984.15	-	66.93	-	433.01	3.50	89.42
NOV	4294.33	2093.66	205.62	13.98	953.32	503.06	42.47	-	8.03	445.09	29.10
DEC	7705.99	4785.55	221.50	213.17	1073.26	127.35	161.54	87.75	865.22	22.35	148.30
TOTAL	50998.06	29996.27	2267.82	939.82	11360.83	1141.97	996.64	285.93	2518.65	915.52	574.63

BRACKETS INDICATE CREDIT

1968 OPERATING COSTS



TOTAL ANNUAL COST



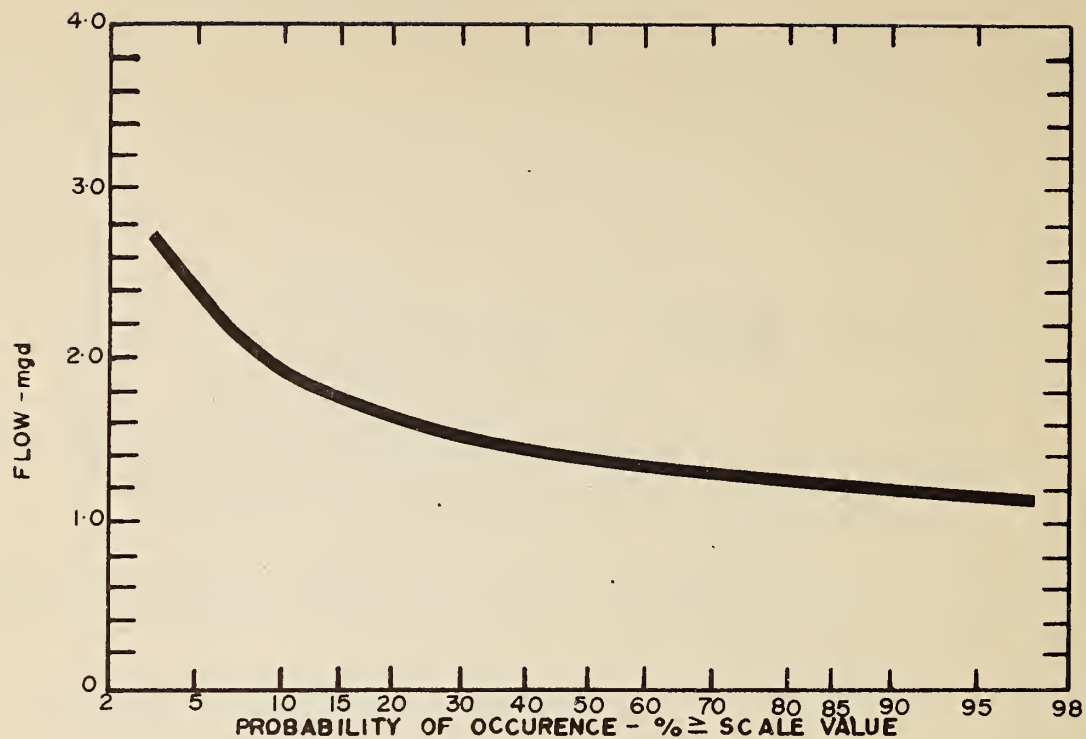
Yearly Operating Costs

YEAR	M G. TREATED	TOTAL COST	COST PER THOUSAND GALLONS
1964	381.52	\$40,425.88	\$0.11
1965	370.56	42,165.16	0.11
1966	469.93	45,349.85	0.10
1967	506.22	46,873.97	0.09
1968	512.31	50,998.06	0.10

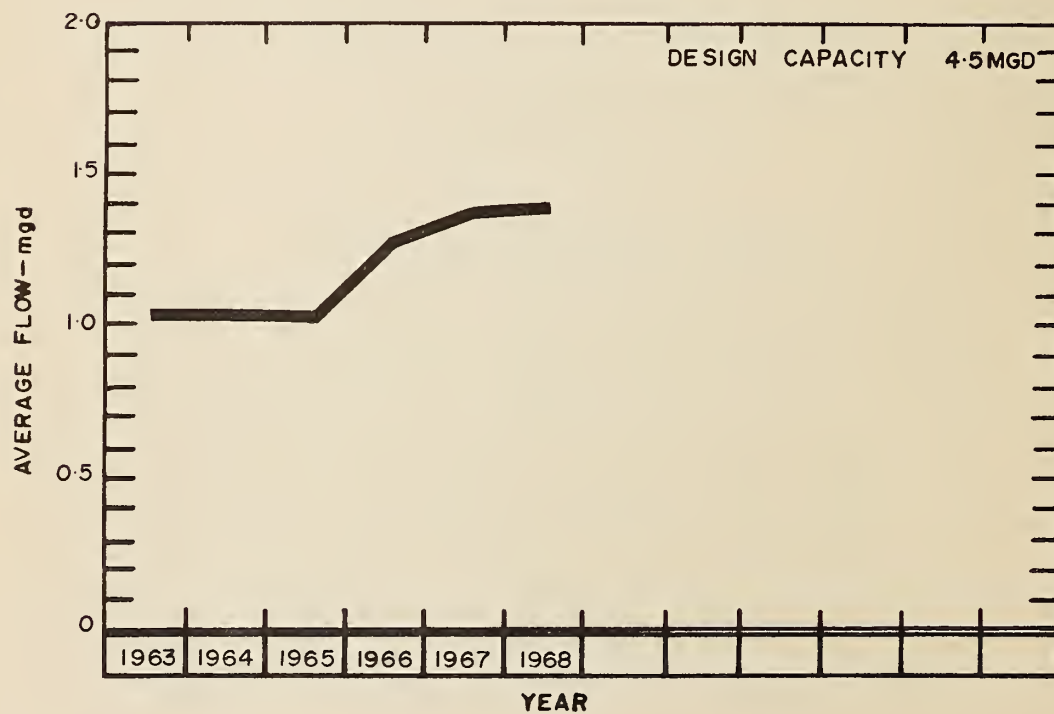
Process Data

The treatment of water at the Bertie Township plant consists of raw water screening, microstraining to remove algae and gross solids, and disinfection with chlorine.

The following data provide information regarding plant flows, the quality of raw and treated water and the chlorine dosage necessary to maintain a safe product.



F L O W S

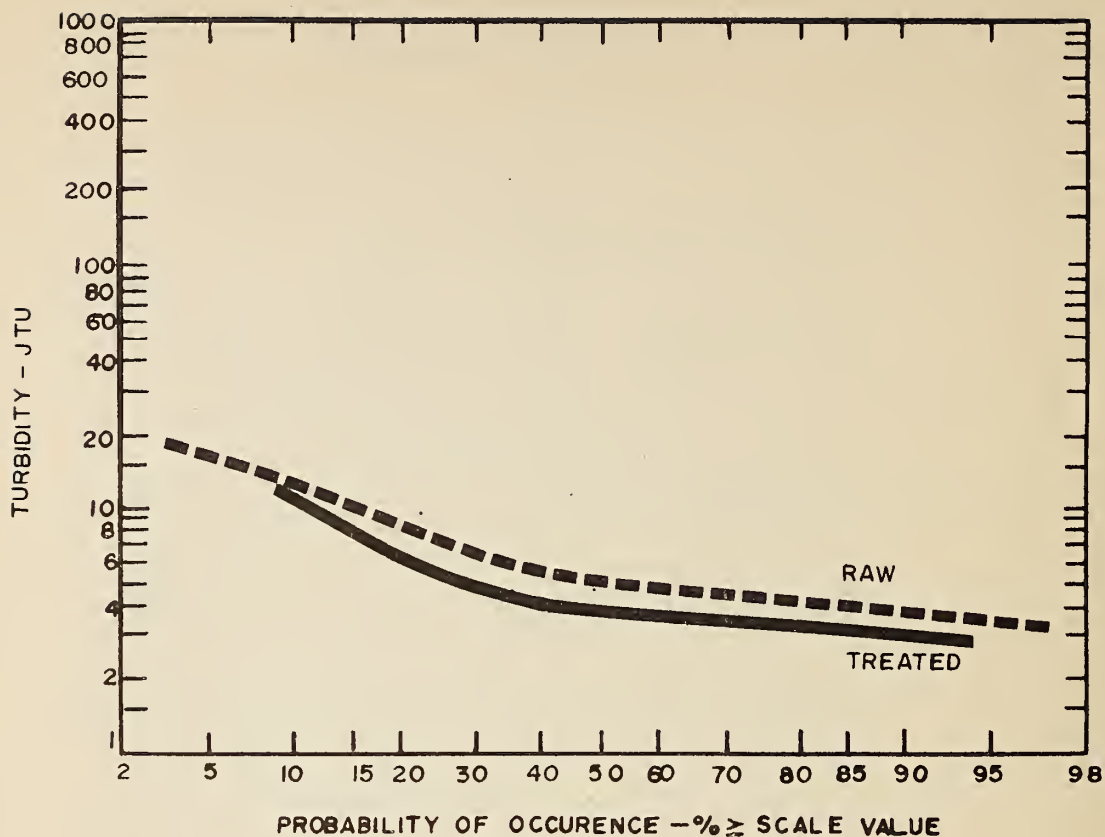


PLANT FLOWS

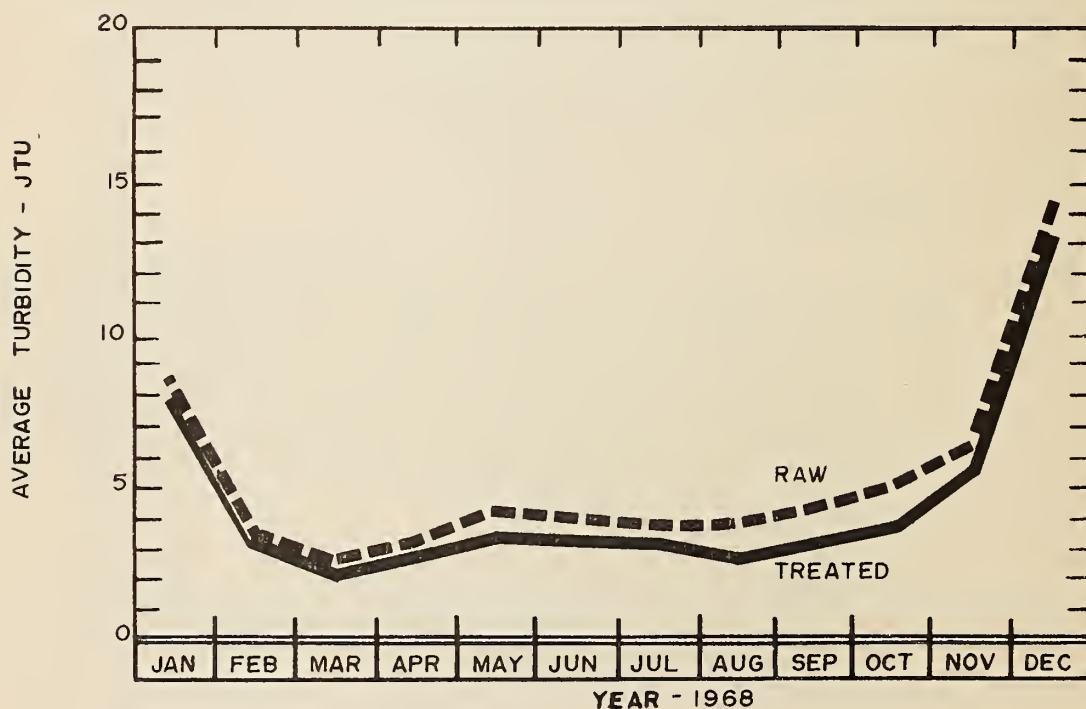
MONTH	TOTAL FLOW mg	AVERAGE DAILY FLOW mg	MAXIMUM DAILY FLOW mg	MINIMUM DAILY FLOW mg
JAN	41.83	1.35	1.74	1.15
FEB	34.18	1.18	1.25	0.98
MAR	36.03	1.16	1.28	1.04
APR	37.44	1.25	1.60	1.08
MAY	36.41	1.18	1.45	0.96
JUN	44.31	1.48	1.93	1.13
JUL	72.60	2.34	3.19	1.59
AUG	55.04	1.78	2.89	1.53
SEPT	43.46	1.45	1.67	1.35
OCT	40.26	1.30	1.46	1.18
NOV	35.15	1.17	1.27	1.06
DEC	35.59	1.15	1.38	1.05
TOTAL	512.30	-	-	-
AVERAGE	42.69	1.40	-	-

COMMENTS

During 1968, a total of 512.30 million gallons of water was supplied to industries and residents in the municipality. The average daily flow was 1.40 million gallons, up by 1.2% from 1967. The maximum daily flow of 3.19 million gallons occurred in July and the minimum daily flow of 0.98 million gallons occurred in February. Characteristically, the peak month was July and the average daily flow for the month of 2.34 million gallons as opposed to the average daily flow for the month of December of 1.15 million gallons.



TURBIDITY



COMMENTS

The turbidity of water is a measure of the interference presented by suspended matter to the passage of light. This measurement indirectly measures suspended matter such as clay, silt, finely divided organic matter and microscopic organisms present in the water. Treatment provided at the plant is designed principally to remove algae and other growths solids from the Lake Erie water by microstraining.

The OWRC standard for turbidity and treated water is one Jackson Turbidity unit. This standard was not achieved at the Bertie Township plant in 1968. The average treated water turbidity was four JTU, and 12% of the time treated water turbidity exceeded ten JTU.

CHLORINATION AND DISINFECTION

MONTH	COLIFORM				CHLORINE		
	RAW WATER		TREATED WATER		Total Used (lbs.)	Prechlor. Dosage mg/l	Postchlor. Dosage mg/l
	No. of Samples Taken	Avg. Density No. /100ml	No. of Samples Taken	No. with Coliform > 0/100 ml			
January	2	13	5	0	417	-	1.0
February	2	19	2	0	274	-	0.8
March	2	14	2	0	260	-	0.7
April	3	2	9	0	301	-	0.8
May	2	5	8	0	376	-	1.0
June	2	2	8	0	588	-	1.3
July	2	23	8	0	1024	-	1.4
August	2	78	8	0	702	-	1.3
September	2	35	8	0	528	-	1.2
October	2	47	8	0	456	-	1.1
November	2	60	8	0	355	-	1.0
December	2	22	8	0	332	-	0.9
TOTAL	25	-	82	-	5613	-	-
AVERAGE	2	27	7	0	468	-	1.1

COMMENTS

A total of 25 raw water samples were analysed for total coliform counts with an average density of 27 coliforms per 100 ml sample. A total of 82 treated water samples were taken and analyses indicated the water was bacteriologically safe for human consumption.

A total of 5613 lbs. of chlorine was required for disinfection purposes. An average chlorine residual, after 15 minutes, of 0.5 mg/l was maintained in accordance with OWRC requirements.

WATER QUALITY

CHEMICAL PROPERTY	RAW WATER				TREATED WATER				DESIRABLE STANDARDS
	No. of Samples	Avg.	Max.	Min.	No. of Samples	Avg.	Max.	Min.	
HARDNESS mg/l CaCO_3	12	140	158	128	12	141	158	130	80-100
ALKALINITY mg/l CaCO_3	12	102	116	94	12	100	116	93	30-100
IRON mg/l Fe	12	0.36	1.05	0.16	12	0.28	1.00	0.10	< 0.3
COLOUR Units	12	< 8	20	< 5	12	< 8	30	< 5	< 5
CHLORIDE mg/l Cl	12	26	28	23	12	29	46	26	< 250

CONCLUSIONS

There was a small increase in the total plant flow during 1968. The unit operating cost increased slightly from nine cents to ten cents per thousand gallons. The bacteriological quality of the treated water was satisfactory and there was a slight decrease in average treated water turbidity during the year.

Plant structure, equipment, and grounds were in excellent condition at the conclusion of 1968. The fault with the low voltage feeder cables was corrected.

RECOMMENDATIONS

The treatment are limited, and JTU in the treatment is recommended works to include improving the

Ontario Water Resources Commission
DIVISION OF PLANT OPERATIONS.
BERTIE
OPERATING SUMMARY 1968.
TD 227/B47/B47/1968/MOE
COPY #1

DATE	ISSUED TO ASCK
LABORATORY LIBRARY	
ONTARIO WATER RESOURCES COMMISSION	

TD
367
.A56
B47
1968

Bertie : water treatment plant.
81614

LABORATORY & RESEARCH LIBRARY
MINISTRY OF THE ENVIRONMENT

LABORATORY LIBRARY
ONTARIO WATER RESOURCES COMMISSION



Water management in Ontario